

R E M A R K S

Reconsideration of this application, as amended, is respectfully requested.

THE SPECIFICATION

The specification has been amended to insert the language required by 37 CFR 1.84(a)(2)(iv), as required by the Examiner. And it is respectfully requested that the amendment to the specification be approved and entered.

THE DRAWINGS

On page 2 of the Office Action, the Examiner objected to Figs. 3 and 4 as being color drawings filed without a proper petition. It is respectfully pointed out, however, that a Petition under 37 CFR 1.84(b) to Accept Photographic Drawings was filed with the application papers, together with three sets of the color photographic drawings and payment of the fee required by 37 CFR 1.17(h).

A copy of the Return Receipt Postcard is attached hereto to show that the USPTO received the Petition, the three sets of the color photographic drawings, and the payment of the fee required by 37 CFR 1.17(h).

Attached hereto is a black and white copy of the page of photographic drawings, as required by 37 CFR 1.84(a)(2)(iii).

It is respectfully submitted that color photographic drawings Figs. 3 and 4 are necessary to explain the color balance adjustment of bright-field observation and fluorescent observation, respectively. Fig. 3 shows the effect of color balance in bright-field observation according to the present invention. As shown in Fig. 3, the colors of red portions 301a, 301b and 301c of the specimen are balanced, whereas color balance adjustment is not performed with respect to the achromatic background portion 302. Fig. 4 shows the effect of color balance adjustment in fluorescent observation according to the present invention. As shown in Fig. 4, the color of the green portion 401 of the specimen is balanced, whereas color balance adjustment is not performed with respect to the black achromatic background portion 402.

In view of the foregoing, it is respectfully submitted that the requirements of 37 CFR 1.84(b) have been fully satisfied, and it is respectfully requested that the Examiner's objection to the drawings be withdrawn.

THE CLAIMS

Claims 2-4 and 10 have been amended to make some minor grammatical improvements and/or to correct minor antecedent basis problems so as to put place the claims in better form for issuance in a U.S. patent. These amendments are clearly clerical

in nature and are not related to patentability and do not narrow the scope of the claims either literally or under the doctrine of equivalents.

In addition, claims 11 and 13 have been added, depending from claim 10, to recite the feature of the present invention described in the specification at page 28, line 22 to page 30, line 10, whereby the tone correction unit corrects the tone of an observation image of a fluorescent observation, according to the determination of the luminance distribution determination unit. (See also Figs. 5 and 6.)

Still further, claims 12 and 14 have been added, depending from claim 10, to recite the feature of the present invention described in the specification at page 33, line 4 to page 34, line 21, whereby the tone adjustment unit corrects the tone of an observation image of a transmission bright-field observation, according to the determination of the luminance distribution determination unit. (See also Figs. 7 and 8.)

No new matter has been added, and it is respectfully requested that the amendments to claims 2-4 and 10 and new claims 11-14 be approved and entered.

THE PRIOR ART REJECTION

Claims 1-10 were rejected under 35 USC 103 as being obvious in view of the combination of USP 6,169,816 ("Ravkin") and

USP 6,285,398 ("Shinsky et al"). This rejection, however, is respectfully traversed with respect to amended claims 2-4 and 10 and new claims 11-14.

Ravkin discloses a method for analyzing samples to find objects of interest that are interspersed with other objects. (See column 1, lines 37-38.) More specifically, Ravkin is directed to a method of detecting fetal nucleated red blood cells and distinguishing the fetal nucleating red blood cells from non-nucleated red blood cells and nucleated white blood cells in a sample of blood from a pregnant woman. (See column 1, line 65 to column 2, line 1.) As described in the Abstract of Ravkin, in order to detect the objects of interest, a sample is stained with a fluorescent dye to detect nuclei and a dye to stain fetal hemoglobin in the cytoplasm of fetal red blood cells. Images are obtained showing both the cytoplasm and the nuclei, and masks are obtained from each image which block out the background of the images. The masks are then overlaid to detect objects of interest.

By contrast, the present invention is directed not to detecting objects of interest, but rather to improving the image quality of an observation image.

Specifically, according to the present invention as recited in independent claim 2, a chromaticity determination unit determines chromaticity of the observation image based on the

microscopy technique detected by the microscopy technique determination unit and determines a region where color balance is to be adjusted in the observation image, and a color balance adjustment unit adjusts color balance in accordance with a color balance adjustment amount arbitrarily set for the region of the observation image determined by the chromaticity determination unit.

And according to the present invention as recited in independent claim 10, a luminance distribution determination unit for calculating a luminance distribution of the observation image based on the microscopy technique detected by the microscopy technique determination unit and determines from the luminance distribution a region where tone is to be corrected in the observation image, and a tone adjustment unit corrects tone in accordance with a tone correction amount arbitrarily set for the region of the observation image determined by the luminance distribution determination unit.

Thus, according to the claimed present invention, a fluorescent image or a bright-field image is processed singly, without requiring the acquisition of an image of an alternate type. In addition, according to the claimed present invention, the image is not spatially divided by masks. Rather, the image is processed according to the luminance distribution data and chromaticity of pixels in the observation image. That is, as

shown in part "a" of Fig. 5 and in part "c" of Fig. 7, only pixel data having a certain luminance is subjected to correction, while the background is not.

On page 3 of the Office Action, the Examiner asserts that it would have been obvious to apply well-known techniques of tone adjustment and color balance adjustment to Ravkin in order to achieve the claimed present invention.

It is respectfully submitted, however, that although tone adjustment and color balance adjustment are well known techniques of image processing, even if the invention disclosed by Ravkin was adapted to include tone adjustment or color balance processing, the features of the claimed present invention still would not be achieved. In particular, it is respectfully pointed out that if processing to improve image quality were applied to an image that has been masked to show only objects of interests as according to Ravkin, the masked background areas would also be subjected to the image processing. Thus, if known image processing methods were applied to Ravkin, it would still not be possible to correct only valid luminance or chromaticity data without subjecting the background areas to correction, as according to the claimed present invention.

Accordingly, it is respectfully submitted that the present invention as recited in each of independent claims 2 and 10, as well as each of claims 3, 4 and 11-14 respectively depending

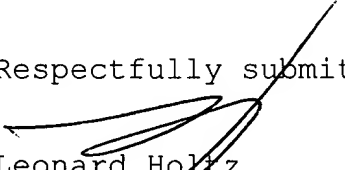
therefrom, patentably distinguishes over Ravkin, taken singly or in combination with Shinsky et al, under 35 USC 103.

* * * * *

In view of the foregoing, entry of this Amendment, allowance of the claims and the passing of this application to issue are respectfully solicited.

If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned at the telephone number given below for prompt action.

Respectfully submitted,


Leonard Holtz
Reg. No. 22,974

Frishauf, Holtz, Goodman & Chick, P.C.
767 Third Avenue - 25th Floor
New York, New York 10017-2023
Tel. No. (212) 319-4900
Fax No. (212) 319-5101

DH:iv



Atty. Docket #00021/LH

THE PATENT OFFICE ACKNOWLEDGES RECEIPT OF:

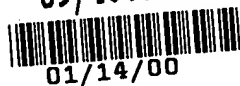
New appln: Transm. ltr (dupl.); spec, claims,
Abstract (53 pages); Declaration; Assignment
w/record. cover sheet; 7 sheets formal drawings
(Figs. 1-12 - 3 sets); Infor. Discl. Statement; 1449 form;
1 reference; Petition Under 37 CFR 1.84(b) To
Accept Photographic Drawings;
\$768. ck. #77732; \$40. ck #77733 & \$130. ck #77734.

H. MASUYAMA et al

LH:bv

Priority: January 19, 2000
Mailed: January 14, 2000
EXPRESS MAIL # EL 396 044 940 US

jc584 U.S. PTO
09/483521



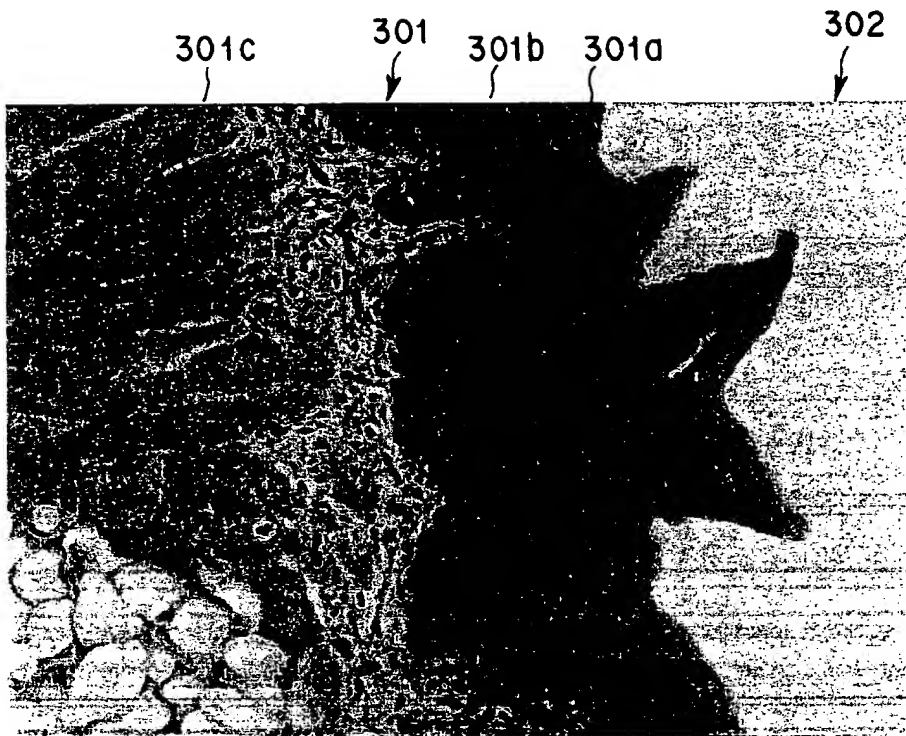


FIG. 3

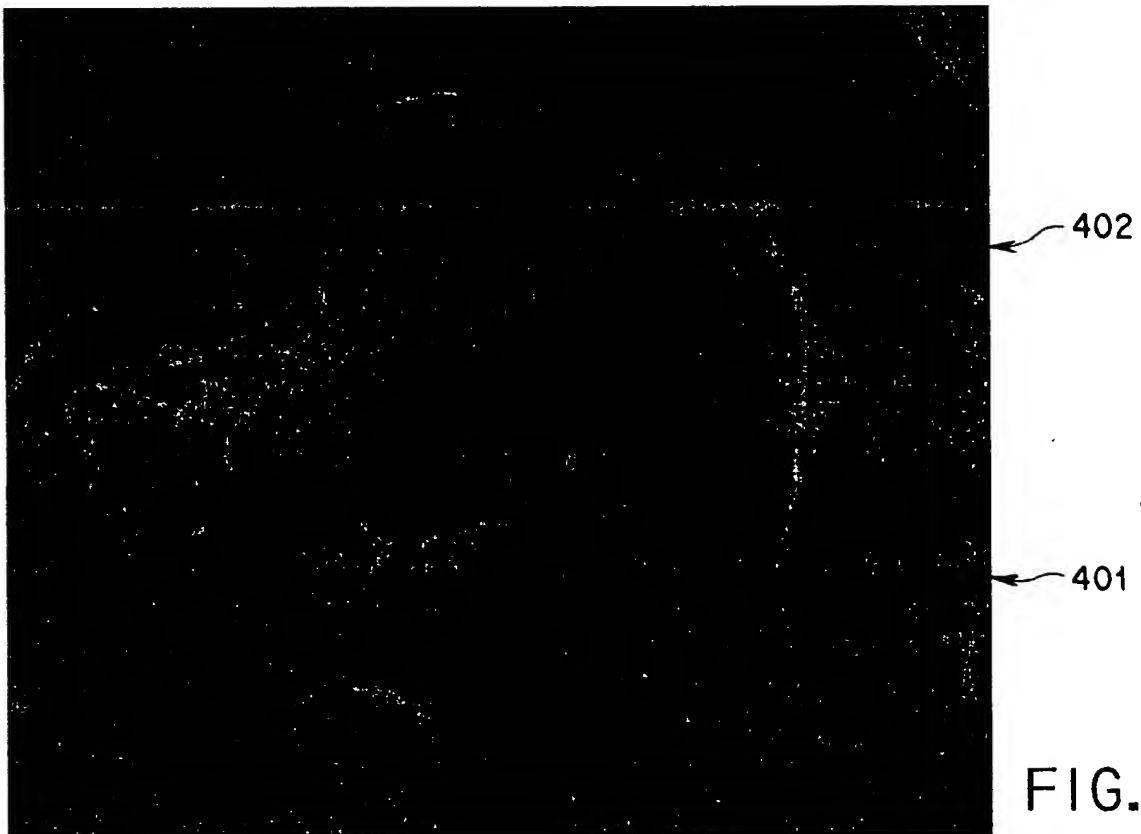


FIG. 4